UNIVERSITI TEKNOLOGI MARA

STUDY OF SALIVARY INORGANIC ELEMENTS IN RELATION TO DENTAL CARIES IN A GROUP OF MALAYSIAN PRIMARY SCHOOL CHILDREN IN SHAH ALAM

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of the requirements for the degree of
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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulation of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledgment as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulation for Post Graduate, Univesiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Introduction: Dental caries is one of the most common dental diseases. It is a competition between the pathologic factors such as bacteria and carbohydrates and the protective factors such as saliva. Saliva refers to the fluid that surrounds oral tissues and maintains normal physiologic functions. Previous studies had shown that inorganic constituents of saliva played an essential role in the caries process. **Objectives:** To determine and compare the concentration of salivary inorganic elements namely, Sodium (Na), Potassium (K), Copper (Cu), Zinc (Zn), Manganese (Mn) and Iron (Fe) and assess their possible relationship with caries in unstimulated saliva obtained from Malaysian school children aged 8-12 years old in Shah Alam. **Methods:** 120 primary school children were included; caries status of each child was scored. Five ml of unstimulated whole saliva was obtained. Saliva samples subjected to analysis of elements concentrations using Atomic Absorption Spectrophotometer. **Results:** Na, K, Cu and Zn mean levels in caries free group were 16.88±8.20 ppm, 21.57±11.29 ppm, 0.12±0.06 ppm and 0.09±0.05 ppm, respectively. While in caries group the mean levels were 40.41±20.66 ppm, 30.39±13.53 ppm, 0.29±0.08 ppm and 0.14±0.10 ppm, respectively. Mn and Fe levels did not show any significant variation. All the investigated elements showed highly significant variations when compared among Malays, Indians and Chinese groups. A statistically significant difference was observed between different age groups. No sex based difference was found. **Conclusions:** Na, Cu and Zn levels in saliva were significantly lower in caries free group, K level in saliva was significantly higher in caries free group. A statistically significant positive correlation was recorded between salivary Na, Cu and Zn levels and dental caries, while a negative correlation was found between salivary K and dental caries, thus suggesting the possibility of their effect and potentiality in modifying the dental caries.

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